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Social Sciences and Humanities
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Conseil de recherches en
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Canada

IN THE WILDERNESS :—

OF DREARINESS.

A solitary place,—a heaven of brass,
Fierce, shining, pitiless :
For thy poor feet, no sward of yielding grass ;—
O'er rugged ways of iron thou must pass
In painfullest distress :
The very dews forget their tender power ;
A smarting hail of dust, the only shower.

And Duty, barren Duty, all around,
As stones of iron, cold ;
And Law, fierce flawless Law, the dreary bound
That all thy heaven shuts in : nor gourd is found
Nor stream, nor shelt'ring fold ;
No ease, no hope, no human love to bless
Thy faintings in this hungry wilderness.

But list, a voice,—sure, friendly is the tone,—
"Nay, hath God set thee here,
And doth He offer for thy meat a stone ?
Then is it that He knows thy will alone
Can bid abundant cheer ;
Abjure thy toils, sit soft and take thine ease,
And, lo, these stones shall feed, this desert please !"

Hence, Charmer, wise as false, who know'st so well
With truth to trick thy tale !—
These stones in sooth yield meat to holy spell :
Take thy tasks to thee, selfish aims expel—
So, comfort shall not fail :
Thy choice, as His, to do the Father's will,—
Behold, the Word that bids is Bread to fill !

C. M. M.

A FORGOTTEN PIONEER OF A RATIONAL EDUCATION AND HIS EXPERIMENT.

By Rev. H. H. Moore, M.A.

Part II.

In deciding what scheme of education should be devised for a school, Mr. Dawes held that careful consideration should first be given to the conditions of life and the future occupations of the children. In the King's Somborne School all the children, whether of labourers or farmers, would naturally have to get their living from the material objects that surrounded them ; their thoughts and labour would be constantly associated with natural phenomena, laws, and forces ; their very existence depended upon understanding and availing themselves of these ; therefore Mr. Dawes considered that great prominence should be given to instruction bearing upon the occupations by which they were in after life to earn their bread,—that they should be taught to reflect upon and understand the things with which their observation made them familiar, or which would be associated with their daily life and labour. He believed that the then prevailing apathy of parents of the labouring class about school education was greatly due to the fact that it did not come home to their wants, that it was generally of little or no practical service in training children for their future occupations. Therefore the most characteristic and valuable feature of the scheme of secular education which Mr. Dawes devised was "instructing and interesting the scholars in the science of common things." None of the usual subjects of an elementary school course were omitted or neglected ; on the contrary they were much better taught than in most schools.* Mr. Dawes thus explained his object :—" I aimed at teaching what would be profitable and interesting to persons in the position in life which the children were likely to occupy. I aimed at their being taught what may be called the philosophy of common things—of every-day life. They were shown how much there is that is interesting, and which it is advantageous for them to know, in connection with the natural objects with which they are familiar ; they had explained to them and were made acquainted with the principles of a variety of natural phenomena, as well as the principles and construction of various instruments of a useful kind. A practical turn was given to everything ; the uses and fruits of the knowledge

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* Extracts from H.M.'s Inspector's report prove this :—" Though so many other things are taught besides reading, the children are found in advance in reading of other schools in the majority of which scarcely anything else is taught." " It is not however only by the ability to read with ease and correctness that this school is in advance of others, but yet more by the correct emphasis and the just expression with which the elder children read, and particularly the girls." ' I certainly never have examined little children who could spell so well." " In all the classes of the school the children appear to have a good knowledge of arithmetic ; they are moreover taught English grammar, geography, and English history." " Algebra is taught to 21 boys of the first class, and geometry to 11. I have rarely heard boys answer so well in Euclid as some of them did." " Mensuration is taught as an application of the principles of geometry, and I can bear testimony that they are not taught these things in a parrot-like way, but led to understand them as a matter of reasoning." To reading poetry and learning it by heart Mr. Dawes attached great importance, and carefully took every opportunity of associating with nature lessons any suitable pieces of poetry relating to the subject. He said :—" I know of nothing which has tended so much to humanise the children in this school, and to improve their minds, by calling forth the gentler features of their nature." Great attention was also given to singing, and public concerts were occasionally given by the children (a novelty in those days) to the delight of the villagers. The girls were taught not only to knit and to sew, but also to cut out and make their own clothes ; this also was a novelty in those days. Besides the Scripture teaching in day school, Mr. Dawes taught the senior children in his own house on Sunday evenings. Both he and Mr. Moseley agreed in the opinion that the intelligence developed by teaching the children the science of common things greatly contributed to their knowledge and understanding of the Scriptures ; the Scripture lessons benefited by the secular lessons. Mr. Dawes said :—" I would not lose sight for a moment of the highest part of education—the moral and religious training of the children ; and it is my firm conviction, the result of my own experience, that the effect of religious teaching is greatly increased when brought to bear upon the minds that have been trained to thought and reflection, and have been interested by the contemplation of the attributes of the Deity as they are displayed in the objects and phenomena of surrounding nature."

they were acquiring were never lost sight of." *A list of some of the subjects included in this kind of teaching will be the best commentary on Mr. Dawes' scheme :—

"Some of the properties of air, explaining how its pressure enables them to pump up water, to amuse themselves with squirts and popguns, to suck up water through a straw ; explaining also the principles and construction of a barometer, the common pump, the diving-bell, a pair of bellows. That air expands by heat, shown by placing a half-blown bladder near the fire, when the wrinkles disappear. Why the chimney-smoke sometimes rises easily in the air, sometimes not. Why there is a draught up the chimney, and under the door, and towards the fire. Air as a vehicle of sound, and why the flash of a distant gun fired is seen before the report is heard ; how to calculate the distance of a thunderstorm ; the difference in the speeds at which different materials conduct sound. Water and its properties, its solid, fluid, and vapourous state ; why water-pipes are burst by frost ; why ice forms and floats on the surface of ponds, and not at the bottom ; why the kettle-lid jumps up when the water is boiling on the fire ; the uses to which the power of steam is applied ; the gradual evolution of the steam engine, shown by models and diagrams ; how their clothes are dried, and why they feel cold sitting in damp clothes ; why a damp bed is so dangerous ; why one body floats in water, and another sinks ; the different densities of sea and fresh water ; why, on going into the school on a cold morning, they sometimes see a quantity of water on the glass, and why on the inside and not on the outside ; why, on a frosty day, their breath is visible as vapour ; the substances water holds in solution, and how their drinking water is affected by the kind of soil through which it has passed. Dew, its value, and the conditions necessary for its formation ; placing equal portions of dry wool on gravel, glass, and the grass, and weighing them the next morning. Heat and its properties ; how it is that the blacksmith can fit iron hoops so firmly on the wheels of carts and barrows ; what precautions have to be taken in laying the iron rails of railways and in building iron bridges, &c. ; what materials are good, and what bad, conductors of heat ; why at the same temperature some feel colder to our touch than others ; why a glass sometimes breaks when hot water is poured into it, and whether thick or thin glass would be more liable to crack ; why water can be made to boil in a paper kettle or an egg shell without their being burned. The metals, their sources, properties, and uses ; mode of separating from the ores. Light and its properties, illustrated by prisms, &c. ; adaptation of the eye ; causes of long and short-sightedness. The mechanical principles of the tools more commonly used, the spade, the plough, the axe, the lever, &c. The animals, wild and domesticated, of their district, their structure, habits, covering, manner of feeding and moving and of rising from the ground, which ruminants and which not, and the differences in their jaws and teeth of feeders on animal and vegetable food. The birds of the district, their shape and size and habits ; times of migrating and return ; kind of food they live on ; the air cells in their bones so beautifully adapted to the purposes of flight ; how their feathering serves for maintaining warmth and life; the differences in the feet of water-birds and of those that roost. Plants and flowers brought to the school and examined; the names of the different parts and the function which each part performs; the nature of the root, whether bulbous, fibrous, or tap-rooted; the uniformity in number of the petals, stamens, pistils, &c., running through the same class of plants; shapes of the leaves; soils and situations most favourable. The trees and the differences in their external appearance, leaves, bark, texture of the wood, value and uses as timber; which deciduous and which evergreen. The materials used in building and furnishing their houses, whence obtained and how prepared. Their clothing and its materials, which vegetable, which animal; the comparative value and suitableness of different materials for different purposes, specimens of each being shown. Articles of food, whence obtained, how prepared; their dietetic properties and values; the history of a cottage-loaf. A barometer and thermometer were hung up, and readings regularly taken by the children, the weekly and monthly averages being made an exercise of their arithmetic. The structure of the solar system; the different movements of the earth and their effects; whether a body at the equator would weigh less or more than at the poles; why the lark soaring in the sky does not find the field in which she has placed her nest moved from under her by the rotation of the earth on its axis; they were taught to notice the points of the compass where the sun rises and sets at different parts of the year, and the varying lengths of shadows cast at noon according to its altitude; the reason of the increase and decrease in the length of days; the divisions of time, which natural, which conventional. A geological map was hung in the room from which they learned which were agricultural, which mineral districts, and how the relative number of towns and population and the character of the industries are thereby affected." *

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* His book, *Suggestive Hints on a Secular Education*, from which this list is selected, is unfortunately out of print, and cannot, I believe, be obtained now even from second-hand booksellers. It should be reprinted, for it would be most valuable and helpful to all who wish to follow on the lines of Mr. Dawes' Science of Common Things.

It may surprise some who read carefully the above list that such subjects should have been taught to the children of a rural elementary school. But it is an undeniable fact that they were taught in King's Somborne School, and so successfully that the children were both interested and benefited by the teaching. Mr. Dawes, in answer to the objection that such subjects are above the comprehension of the young, said:—"The distinguishing mark of nature's laws is their extreme simplicity. It may doubtless require intellect of a high order to make the discovery of these laws; yet, once evolved, they are within the

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* Mr. Dawes' educational activities were not confined to the children. With a view to encourage a knowledge of the application of science to agriculture he arranged for a course of six lectures to be given in the schoolroom for the benefit of the gentlemen, and farmers, and schoolmasters of the neighbourhood. At that time such lectures were a novelty and they have only ceased to be so of late years through the action of County Councils. The lecturer was Mr., afterwards the eminent Dr., Frankland, one of the teaching staff at the famous Queenwood Agricultural College, of which Mr. Edmondson was the head. It may be interesting to note that Tyndall was one of the teachers there at the same time.

capacity of a child,—in short, the principles of natural philosophy are the principles of common sense, and if taught in a simple and common-sense way, they will be speedily understood and eagerly attended to by children; and it will be found that with pupils of even from ten to twelve years of age much may be done towards forming habits of observation and enquiry." Such a fact, I think, suggests some valuable practical lessons for those who have the responsibility of deciding what subjects to include in an educational system for children.

Firstly, Mr. Dawes' experience plainly indicates the practicability and wisdom of giving prominence to nature-study from the earliest years, beginning of course with the most familiar natural objects and gradually leading up to the simple rudiments of natural science. If the great world of nature, its phenomena, forces, and laws, is ever to be made a subject of study, there is no time better than childhood for beginning that study; because there is no time when the pupil is more easily interested in natural objects. Wait until the child has reached adult age, and is capable of mastering all the "'ologies" and "'onomies," and probably there will be no taste for such subjects to animate the study. It is wise to take the line of least resistance when possible, and to allot subjects of study to the age when they are the most readily learned. The field of nature is at once the best schoolroom and the best playground for the young child, and even if the child were left to himself in it he would find both lessons and amusement therein. Childhood has great capacities for wonder and enjoyment, responding to the beauties of flower and field and wood, to the varied forms and habits of bird and beast and insect, to the solemnities of moonlit and starry sky; and as the reasoning faculties expand it can feel a thrill of delighted surprise when some secret of nature's design and working is revealed to it, such as is rarely felt in later life when even wonders have become stale by familiarity. Never more fully than in early life is it true that "to understand is to enjoy." Just because of this instinctive fondness for nature, children will make quicker progress in nature-study than in any of their ordinary school lessons which at first more or less "go against the grain." Speaking from his own experience, Mr. Dawes said that it was a great mistake to suppose that such natural science teaching as he advocated could not be understood by children under twelve or thirteen years of age. The subject of nature-study may thus be turned to very good account at an early stage of education, and made the means of a good deal of useful instruction, for, as Mr. Dawes said, " They are capable of understanding it ; they have eyes and are not wanting in curiosity : they ask questions, and love to be informed."[*] John Richard Green, in the introduction to his *Short Geography of the British Isles*, says :—" The test of right teaching will be found in the correspondence of our instruction with the development of intellectual activity in those whom we instruct. The starting point of education will be the child's first question. And the child's first question is about the material world in which it finds itself. So long as every sight and every sound is an object of wonder, and of the curiosity that comes of wonder, life will be a mere string of " whats " and " whys."

A *second* lesson which Mr. Dawes' experience emphasises is—that not only is nature-study that to which children are instinctively more inclined than any other school subject, but also it is that which is the most suitable and valuable for their mental training. Two of the most vitally important faculties for the mental equipment both of young and old are intelligent observation and correct reasoning. The study of natural science furnishes the widest field and most efficient instruments for the exercise and development of these faculties. A comparison of the relative values of different kinds of knowledge led Herbert Spencer to decide that science, in its most comprehensive meaning, is the best preparation for all the activities of life, and that a scientific habit of drawing conclusions from data, and then of verifying those conclusions by observation and experiment, can alone give the power of judging correctly. Mr. Dawes disclaimed any pretensions to be teaching astronomy, geology, botany, physics, chemistry, &c. ; as he would have said, if such a claim were made for him, it would be like " making very large gates for a very small city." But, although he did not teach these sciences formally and specifically, yet he did practically make the children acquainted, as far as their mental powers permitted, with the fundamental principles, and some of the more important and interesting facts of those sciences. Professor Huxley said :—" We want some systematic and good teaching in a sort of developed object lessons. The man who has a real knowledge of science can make the commonest object in the world subservient to the principles and greater truths of natural knowledge. Do not suppose that any amount of book work, any repetition by rote . . . are of value for our object ; that is mere wasting of time ; but take the commonest object and lead the child from that foundation to such truths of a higher order as may be within his grasp." What Professor Huxley desired, Mr. Dawes had been doing many years before. In teaching the "science of common things" he was in a humble way laying the foundations of a scientific training. The children were taught to observe and reflect upon objects to which perhaps, because of their very familiarity, they would otherwise give no particular attention. By object lessons, questions, suggestions, experiments, they were directed in the investigation of the characteristic features and properties of the things around them, and led on through the scientific processes of reflecting on and discriminating the results of their observation, and drawing correct inferences from them. The instruction was made as much as possible self-instruction, the aim being to teach them to think, not to save them the trouble of thinking ; for, as it has been well said, "you might quite as reasonably eat their food in order to fatten them, as do their thinking and expect them to become mentally capable" (John Angell).

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[*] As an illustration of the early age at which a child may without conscious effort absorb a fair amount of nature-lore, a correspondent of the *Century Magazine* wrote :—" This is no dream of the imagination, but the outcome of a successful experiment. I could tell you of a little girl, six years old, who cannot read a word, but who knows many flowers, and how they grow, and can roughly classify them ; who knows the names of some of the planets and constellations, and where to look for them ; who delights in watching the ants, bees, and birds, and in hearing stories about them, and who expresses her ideas with ease and accuracy. All this has been accomplished without perceptible effort on the part of the child, though of course there has been earnest effort on the part of the mother." Of the interest which children take in having their attention drawn to the wild flowers of their district a pleasing instance was mentioned to Mr. Dawes by Professor Henslow, who had printed a list of all the wild flowers in his parish for the use of his scholars. Walking out one day he heard a girl calling out to him, " Mr. Henslow, Mr. Henslow, a new wild flower for Hitcham ! a new wild flower for Hitcham ! " and true enough, it turned out to be one unknown to him as growing in the neighbourhood. To show the interest that his mode of teaching elementary science can excite in children, Mr. Dawes mentions the following occurrence :—" A few days ago, writing in my study, I heard a noise of joyous voices, which I found proceeded from half-a-dozen boys, who, after school hours, had come to measure my garden roller. The master of the school had been teaching them how to find the solid contents of a roller (such as the farmers use in the fields, a hollow iron cylinder), and from knowing the specific gravity of iron to find its weight ; my garden roller occurring to them, they had come to practise upon it." The following is another instance that he gives. He one day saw a bricklayer setting out his walls of a building, by measuring eight feet along his line for one wall, and six feet along the other, which he wished to be at right angles to it, and then placing his ten-foot rod between those points ; if it exactly reached them he was satisfied the wall was square, but had not the slightest reason why. The boys had learned that the sum of the squares of the two sides containing a right angle is equal to the square on the third side. On taking some of them to look at the bricklayer's work, Mr. Dawes says that " the boys who knew the proposition in Euclid on which it depends, were perfectly delighted. Of course they saw the principle, and could have calculated what the length between the two points should have been on taking any other length along the two walls ; but there was great practical skill in taking eight and six feet in order to get an integral number for the result, and particularly so convenient a one as ten feet." King's Somborne boys would not be likely to do anything mechanically, without ever dreaming of the principles on which these measurements and calculations were made. The simple elementary teaching on chemistry that was given in the school caused some of the boys to feel such an interest in it that they formed a voluntary class of ten or twelve, who met on a Saturday with the master, and subscribed among themselves for the expenses. Two of them also went three days a week to Queenwood College to work in the laboratory there.

A *third* lesson that we may learn from Mr. Dawes' teaching the science of common things is, that if we adopt it, we obtain thereby a much needed supplement to the usual school curriculum. Almost all other studies appeal mainly to the memory and imitative faculties, and make little or no demand on the reasoning faculties, they deal with words rather than with things. Thus, natural science corrects the balance of a one-sided system by supplying the defect. The late Professor Pritchard, of the University Observatory, Oxford, expressed it as his opinion that "the habit of a constant appeal to imitation and the memory, which generally constitutes so large a part of the curriculum of our great public schools, is sapping the intellectual qualities of the major part of the youth among us."

A *fourth* and very important lesson that we should notice is that, by his teaching the science of common things, Mr. Dawes

was thus giving the children a most useful preparation for the practical duties and occupations of their future life. True that this teaching did not enable them to plough, to sow, to shear sheep, and make clothes, and mend boots, but it was well calculated to develop in them that scientific habit of thought which is needed and applicable in every department and occupation of life. It made them acquainted with the principles underlying and governing their daily occupations ; it led them to exercise their minds in everything they had to do ; and so it associated intelligence with their labour. As Mr. Dawes said :—"Surely the more of mind a man is able to bring to bear upon his work, the more productive his labour is likely to be both to himself and to the community to which he belongs." The famous painter, Etty, being asked by an inquisitive visitor, "Pray, Mr. Etty, with what do you mix your colours ?", "With brains, sir," Etty replied. The purpose of Mr. Dawes' teaching was to make his pupils do their work, whatever it might be, not mechanically but "with brains." The teaching however not only served as an instrument for sharpening their intellect for any and every kind of work, but it was also made directly helpful by imparting much useful knowledge closely connected with their daily life and occupation. The list of some of the subjects, which I have previously given, shows that those were specially favoured which had the closest connection with the occupations of farmers and farm labourers. Mr. Moseley thus commented on this feature of Mr. Dawes' scheme :—"Being intended for a class of persons who are to delve out an existence from the material objects which surround them, it assumes the properties of those objects to be legitimate subjects of interest to them, and of reflection ; and, as a principle, that the Almighty, in manifesting His wisdom and goodness in all material things, has in mercy associated the elements of thought with labour, and the means of exercising the highest intelligence with the humblest craft, and for this reason thinking and doing are associated in a pleasurable relation."

A *fifth* lesson is, that not only did such training and knowledge make them more useful workers and better fitted for all the demands of industrial life, but it also made them happier, by opening out sources of pure enjoyment, and enriching their life both mentally and morally. They learned how much there was that was interesting in all the natural objects and phenomena around them, even in the commonest and most familiar things. This was a gift of immeasurable value, especially to the labouring class. As William Howit, in his *Rural Life*, points out :—" The poor man needs culture more than the rich man, because he is fettered to one spot, and tied to one monotonous work." When we reflect that it is the *common* things that occupy the largest place in the world and in life, it is obvious what a difference it must make to a child or a man whether he can or cannot find any interest in those same common things. What a blank in the minds and lives of those persons who find all barren from Dan to Beersheba ! What an unfailing fountain of refreshment to him who can find everywhere something to please and to interest him ! What a world of interest Faraday in his Royal Institution lecture showed to be contained in the flame of a candle ! and Darwin in such humble organisms as worms ! What a series of wonderful pictures a man mending his fire can call up in his imagination if he knows the geological history of a lump of coal ! Everything that God has made He has packed full of wonders and interest that appeal to an intelligent mind.

Lastly, we should reflect that this kind of knowledge, by enabling people to find everywhere sources of innocent enjoyment, not only makes them happier but also better. The mind must needs have something to feed upon. If it is not supplied with wholesome food, it will resort to hurtful stimulants or even garbage, rather than nothing. The plot of ground that is unoccupied by useful plants will soon be filled with weeds. As Herbart says :—" If intellectual interests are starved, if the store of thought is meagre, the ground lies empty for the animal desires." He even went so far as to say that " The stupid person cannot be virtuous." At least it is safe to say that the knowledge which widens the mental horizon, and enables us to extract from the world around us higher and purer enjoyment than is to be found in frivolous dissipations and animal indulgences, must be a great aid and safeguard of virtue.

Having now carefully considered the nature of the teaching which Mr. Dawes called " The science of common things," and his objects in giving it prominence in his scheme of education for an elementary school in an agricultural district, it will, I think, be obvious that he, even thus early, recognised and solved two educational and industrial problems which have assumed a very grave importance at the present day.

Firstly,—why do we see our land being covered in haste with a network of technical schools, art schools, agricultural schools, commercial schools, and manual training, gardening, botany, being introduced into elementary schools ? It is because all classes of the community, especially those concerned in its industrial interests, are becoming now more and more alive to the necessity of bringing the education of the young into closer touch with the industrial requirements of the age and country ; there is a growing demand that the schooling shall have a more direct and practical bearing on the needs and interests of daily life. They see that the nation's commercial and industrial position is being seriously injured by the competition of rivals who have received an education more specially adapted to prepare them for industrial life. More than fifty years ago Mr. Dawes recognised the necessity of (in his own words) " making the instruction bear upon the ordinary duties of life, and the occupations by which they were, in after life, to earn their bread." To him belongs the credit of being the first in this country who both recognised the importance of this kind of education, and also subjected it to the test of experiment. King's Somborne School was the earliest illustration of exercising the minds of the children of elementary schools upon the science of common things, and making it the introductory stage either to practical work or to more advanced and specialised technical training. Lord Ashburton, commenting on Mr. Dawes' system, said :—" If we wish to hold our rank among nations, if we intend to maintain that manufacturing ascendency which is the chief source of our national strength, we must carry this study of common things not only into the schools of the poor, but into our colleges and universities."

The *second* problem which Mr. Dawes showed us how to solve, at least partially, is expressed in the cry " Back to the land." We see with alarm the gradual depopulation of the rural districts that is going on, owing to the constantly increasing exodus to the towns. This diminution in the numbers of so important a class as that of a strong and healthy peasantry is a serious loss both to the vitality and prosperity of the nation, and the question of its causes and prevention is the subject of constant and anxious discussion. Of course the chief factor in attracting the labouring class from country to town is the greater opportunity of obtaining employment and good wages which towns afford. But this is by no means the only cause. We see the class of landowners and others who are possessed of ample means also being detached more and more from country life and interests. The fact is that town life is nowadays so much more attractive than it used to be. Sanitary measures have made it healthier than formerly; it has the advantage of such conveniences as gas, electricity, rapid means of communication with other places, shops of all kinds, and, above all, endless varied amusements elaborated and cheapened to an extreme. By comparison therefore country life is felt to be dull and monotonous; it does not attract the ordinary man or woman, boy or girl, as do the crowded streets, the blazing shop windows, the music halls and theatres, the clubs, concerts, dances, &c., that abound in large towns. Even if wages in the country were as good as in the town, most people of all classes would prefer town to country, because, as they say, there is always so much going on in the town, and nothing in the country. But this notion is due to their imperfect education and limited intellectual resources. The country offers innumerable objects and occasions of interest and enjoyment, but the power of understanding and appreciating them is lacking in the people themselves. If then they are to find recompense and contentment in country life, they must be taught in their early years to observe, understand, and enjoy the marvels and beauties of the world of nature around them; they must acquire the power of extracting mental food and pleasure from even the most familiar objects of their every-day life. And this is just what Mr. Dawes tried to do for his country children, and thereby to help to make them happy and contented in their environment. Lord Ashburton testified from his own personal knowledge that "the children educated at King's Somborne School were more docile, more rapid and more ingenious in their work, more comfortable in their homes, more contented with their lot, for the training they had undergone." What Mr. Dawes did in his limited sphere and humble

way ought to be done in every school in the land.* It is surely a reproach that our educational systems should leave it possible for the great majority of all classes of the population to grow up without any knowledge of the world of nature, and without any real appreciation of it. Such ignorance is unworthy of man as a reasoning creature, and it is a slight on the Creator, Whose infinite power and wisdom fail to attract our attention and to stir our hearts and minds. No man, woman, or child ought to feel dull anywhere, least of all in the country. As Sir Arthur Helps says:—"What! dull, when earth, air, and water are all alike mysteries to you, and when, as you stretch out your hand, you do not touch anything the properties of which you have mastered; when all the time nature is inviting you to talk earnestly with her, to understand her, to subdue her, to be blessed by her. Go away, man; learn something, do something, understand something, and let me hear no more of your dullness." To the properly educated man, as William Howitt says, "Every walk will become a luxury, a poem, a painting—a source of the sweetest feelings and the most elevated reflection." To the poet

"The meanest flower that blows can give
Thoughts that do lie too deep for tears."

Instead of finding the country dull, and thinking that nothing is going on there, we ought to see that miracles are being worked all around us, in earth, and air, and sky, and water. Walt Whitman said:—

"As for me, I know nothing else but miracles;
Every inch of space is a miracle;
Every square yard of the surface of the earth is spread with [the same;
All to me are unspeakable, perfect miracles."

Carlyle said:—"Daily, hourly, the world natural grows more of the world magical to me. This is as it should be." Again he says:—"The gist of my whole thought is to raise the natural to the supernatural," and, "The whole creation seems more and more divine to me, the natural more and more supernatural." We cannot all be made poets and philosophers, but, at least, an education worthy of the name ought to enrich its pupils with sufficient poetic sentiment and scientific knowledge to make God's world a palace of wonders and delights. This was the object that Mr. Dawes aimed at in his scheme of education; there was nothing visionary or romantic about it; it was intensely practical, while it fulfilled the highest function of a rational education. Herbert Spencer said that "To prepare us for complete living is the function which education has to discharge; and the only rational mode of judging of an educational course is to judge in what degree it discharges such function." If, as Christians, we extend the idea of "complete living" to embrace the future life as well as this earthly and preparatory one, the above definition may be accepted as sufficiently correct and comprehensive. The life men have to live here is however conditioned by great differences of circumstances, duties, and occupations. The education therefore must take into account those different conditions and must train the individual so as to fit him for those conditions; it is no use giving the agricultural labourer the kind of education that a seaman, or a banker, or lawyer would require. It can be claimed for the education given in King's Somborne School that it was perfectly adapted to prepare the scholars for complete living in the rank of life and the circumstances and occupations which claimed them. For fifty years we have been educating the children in our elementary schools as if they were all to become clerks, and are only now beginning to feel our way to a more sensible system on the lines of Mr. Dawes' experiment. His idea of a rational education is worth remembering and adopting; he said that "The end of all education should be to prepare the rising generations for those duties and those situations in life which they are called upon to fulfil—whether they be 'hewers of wood or drawers of water,' whether they be of the labouring, the middle, or the upper classes in life,—to make them in their respective stations good citizens and good Christians." A man who had such enlightened and sagacious views of education, who made such bold and original experiments to carry out his ideas, who, at a time when popular education was in a deplorably backward and inefficient condition, indicated the lines of the much needed reforms, and led the way to a better state of things, ought not to be unhonoured and forgotten.

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* Fifty years ago the Education Department commended King's Somborne School as a model worthy to be imitated, yet it is only quite recently that nature-study by means of gardening, botany, educational rambles, have been admitted as legitimate subjects of the school course. In the *Pall Mall Magazine* for June, 1903, is an interesting account of an experiment in nature-study in a country school.

AN EXPERIMENT IN EARLY EDUCATION.

BY MRS F. PETRIE STEINTHAL

IN October, 1881, a primary department was added to a private school in Boston, Mass., and Miss Mary A. Aber was appointed the teacher, in order that an experiment in Education might be made. Miss Aber, after successfully conducting the school for eleven years, wrote a most interesting account of her methods and their results in the *Popular Science Monthly*, from which I venture to give some extracts, knowing how much they will interest English teachers. Miss Aber's aim was to see if the child may not be introduced at once to the foundation of all learning—the natural and physical sciences, mathematics, literature including languages, and history—and at the same time be given a mastery of such elements of reading, writing, and number as usually constitute primary education.

"The experiment began with nine children between the ages of five-and-a-half and seven years. With scale and measuring rod each child was weighed and measured, while such questions were asked as—Have you been weighed before? When? What did you weigh then? How does your weight to-day compare with that? The shyest children forgot they were at school, and chatted freely while watching and comparing results. By questions as to why a present weight or measure was greater than a former one, the statement, 'Children grow,' was obtained. Questions about the cause of growth led to the statements, 'Children eat,' 'Children sleep,' 'Children play.' A question as to whether anything besides children grows started a talk about animals, in which were given the statements, 'Animals grow,' 'Animals eat,' 'Animals sleep,' 'Animals play.' In like manner similar statements about plants were obtained. The children were easily led from thinking of a particular child, animal or plant to the general conception and the use of the natural term. This was the first lesson in natural science. Recalling the first general conception reached in the science lesson a child was asked, 'Nina, what did you say children do?' 'Children grow,' she replied. I said, 'I will put on the black-board something that means what Nina said,' and wrote in Spencerian script, 'Children grow.' In response to invitation the children